

DETAILED ACTION

Election/Restrictions

Claims 6-12 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 5/5/10.

Claim Rejections - 35 USC § 112

Claim 3 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

It is unclear what is meant by "no strongly basic anion exchange group".

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-2, 5, 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Ganzi et al. (Ganzi), U.S. Patent 5,868915.

Ganzi discloses the claimed method for electrodeionization comprising between an anode chamber having an anode and a cathode chamber having a cathode, a desalination chamber in which a side near the anode is demarcated by an anion exchange membrane and a side near the cathode is demarcated by a cation exchange membrane and a concentrating chamber in which a side near the anode is demarcated by a cation exchange membrane, a side near the cathode is demarcated by an anion exchange membrane, with a mixture of anion and cation exchange resin within the concentrating chamber (col. 1, lines 38-65), the method comprising the step of supplying water containing free carbon dioxide to the concentrating chamber, wherein the concentration of the carbon dioxide is within the range claimed (see Example 1, in col. 11 and 12).

Therefore, since the Ganzi patent discloses each and every limitation, the claims are anticipated.

Claims 1-2, 5, 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Liang et al. (Liang), US 2002/0189951.

Liang discloses the claimed method for electrodeionization comprising between an anode chamber having an anode and a cathode chamber having a cathode, a

desalination chamber in which a side near the anode is demarcated by an anion exchange membrane and a side near the cathode is demarcated by a cation exchange membrane and a concentrating chamber in which a side near the anode is demarcated by a cation exchange membrane, a side near the cathode is demarcated by an anion exchange membrane, with a mixture of anion and cation exchange resin within the concentrating chamber, the method comprising the step of supplying water containing free carbon dioxide to the concentrating chamber, wherein the concentration of the carbon dioxide is within the range claimed (see Example 1, on page 8).

Consequently, since the Liang patent discloses each and every limitation, the claims are anticipated.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.

4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 3-4, 13-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ganzi as applied to claims above, and further in view of Liang et al. (Liang), US 2002/0189951.

The Ganzi patent fails to disclose the mixture in the concentrating chamber, wherein the percentage of the cation exchanger increases from the side near the anion exchange membrane toward the side near the cation exchange membrane.

The Liang patent teaches that one having ordinary skill in the art can use varying configurations, such that the bed volume of each type of ion exchange resin is varied without requiring the layering within a cell (see section [0075]).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify Ganzi by the teachings of Liang.

One having ordinary skill in the art would have been motivated to do this modification, because the Liang patent teaches that one having ordinary skill would modify the bed volume of each type of resin to obtain the separation of contaminants, such as the carbon dioxide, without the layering of the resins.

Claims 3-4, 13-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Liang.

The Liang patent fails to explicitly disclose the mixture in the concentrating chamber, wherein the percentage of the cation exchanger increases from the side near the anion exchange membrane toward the side near the cation exchange membrane.

The Liang does however teach that one having ordinary skill in the art can use varying configurations, such that the bed volume of each type of ion exchange resin is varied without requiring the layering within a cell (see section [0075]).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify Liang by the teachings contained therein.

One having ordinary skill in the art would have been motivated to do this modification, because the Liang patent teaches that one having ordinary skill would modify the bed volume of each type of resin to obtain the separation of contaminants, such as the carbon dioxide, without the layering of the resins.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Arun S. Phasge whose telephone number is (571) 272-1345. The examiner can normally be reached on MONDAY-THURSDAY, 7:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam X. Nguyen can be reached on (571) 272-1342. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Arun S. Phasge/
Primary Examiner, Art Unit 1795

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